PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of	
Kenji FUKASAWA.	Group Art Unit: [not assigned]
Application No. 10/099,887	Examiner: [not yet assigned]
Filed: March 14, 2002	Atty. Docket No. MIPFP011
For: COLOR SPACE CONVERTING APPARATUS AND METHOD OF COLOR SPACE CONVERSION	Date: June 12, 2002

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, Washington, DC 20231 on June 12, 2002.

Signed: [signature]
Diane Schwanbeck

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Before examination on the merits, please amend this application as follows:

IN THE SPECIFICATION:

Please amend the specification by deleting the paragraphs identified below and replacing these paragraphs with the corresponding replacement paragraphs set forth below. Attached hereto as separate pages are the "marked-up" versions of prior paragraphs that show all changes that have been made.

Paragraph 0039 (Page 13, line 20 to line 24): please delete this paragraph in its entirety and substitute the following paragraph therefor:

The sixth aspect of the present invention may also be provided as a method of color space conversion or a color space converting program. In either case sixth aspect of the present invention can give working effects similar to those of the fourth aspect of the present

invention, and like fourth aspect of the present invention, it can be realized through various aspects.

Paragraph 0040 (Page 13, line 25 to page 14, line 9): please delete this paragraph in its entirety and substitute the following paragraph therefor:

A seventh aspect of the present invention provides a method for manufacture of a color space conversion matrix for converting a color value of a first color space to a color value of a second color space. The method for manufacture of a color space conversion matrix according to the seventh aspect of the present invention is characterized in that a matrix operation using a matrix is executed to convert the color value of the white point of the first color space to the color value of the white point of the second color space; deviation between the color value of the second color space obtained by executing the matrix operation and the color value of the achromatic color of the second color space is calculated; the matrix is corrected to reflect the calculated deviation so as to match the converted color value of the second color space with the color value of the achromatic color of the second color space, to calculate a corrected matrix; and the calculated matrix is stored in storage means.

Paragraph 0100 (Page 34, lines 9-19): please delete this paragraph in its entirety and substitute the following paragraph therefor:

The correction process for matching white point is described. Where the tristimulus values in the sRGB color space are (Xs, Ys, Zs) and the tristimulus values of the corresponding color giving the same perception in the wRGB color space are (Xw, Yw, Zw), according to Vonkries rule the following relationship is true. Vonkries rule is a color conversion method that considers that when the illuminant light source (white point) differs, the human eye has the function of maintaining a fixed color perception for colors of different illumination (chromatic adaptation), and is a law that holds that where stimuli in the three

types of cells in the cones of the human eye are L, M, N, the stimulus amount sensitivity is inversely proportional to the illuminant light source.

$$\begin{pmatrix} Xw \\ Yw \\ Zw \end{pmatrix} = \mathrm{Mb}^{-1}) \begin{pmatrix} Lww/Lws & 0 & 0 \\ 0 & Mww/Mws & 0 \\ 0 & 0 & Nww/Mws \end{pmatrix} \mathrm{Mb}) \begin{pmatrix} Xs \\ Ys \\ Zs \end{pmatrix}$$

Paragraph 0101 (Page 34, lines 20-22): please delete this paragraph in its entirety and substitute the following paragraph therefor:

Conversion from tristimulus values XYZ to cone level stimulus amounts L, M, N uses the following conversion matrix Mb, proposed by Bradford.

$$\mathrm{Mb} = \begin{pmatrix} 0.8951 & 0.2664 & -0.1614 \\ -0.7502 & 1.7135 & 0.0367 \\ 0.0389 & -0.0685 & 1.0296 \end{pmatrix}$$

Paragraph 0105 (Page 35, lines 15-26): please delete this paragraph in its entirety and substitute the following paragraph therefor:

In the second embodiment, the output color value side white point converted from the RGB color space to the XYZ color space is corrected to match the white point of the input side white point converted from the RGB color space to the XYZ color space, but correction may be performed during conversion of color value color space from the RGB color space to the XYZ color space. That is, the coefficients of matrix M or matrix N may be corrected to match the white point of the input color value side in the XYZ color space to the white point of the output color value side in the XYZ color space, or to match the white point of the output color value side in the XYZ color space to the white point of the input color value side in the XYZ color space. This is because in either case, there is no change in the ability to match the white points of the two color spaces in the XYZ color space.

Remarks

Claims 1-30 are pending in this application.

Applicant has made minor changes to the specification to correct typographical errors. These changes do not introduce any new matter.

Applicant respectfully requests examination on the merits for claims 1-30. If any additional fees are due in connection with the filing of this paper, then the Commissioner is authorized to charge such fees to Deposit Account No. 50-0805 (Order No. MIPFP011).

Respectfully submitted,
MARTINE & PENILLA, L.L.P.

Peter B. Martine
Reg. No. 32,043

710 Lakeway Drive, Suite 170
Sunnyvale, California 94085
Customer Number 25920

MARKED-UP PARAGRAPHS OF SPECIFICATION

Paragraph 0039:

The sixth aspect of the present invention may also be provided as a method of color space conversion or a color space converting program. In either case sixth aspect of the present invention can give working effects similar to those of the [forty-third] fourth aspect of the present invention, and like fourth aspect of the present invention, it can be realized through various aspects.

Paragraph 0040:

A seventh aspect of the present invention provides a method for manufacture of a color space conversion matrix for converting a color value of a first color space to a color value of a second color space. The method for manufacture of a color space conversion matrix according to the [sixth] seventh aspect of the present invention is characterized in that a matrix operation using a matrix is executed to convert the color value of the white point of the first color space to the color value of the white point of the second color space; deviation between the color value of the second color space obtained by executing the matrix operation and the color value of the achromatic color of the second color space is calculated; the matrix is corrected to reflect the calculated deviation so as to match the converted color value of the second color space with the color value of the achromatic color of the second color space, to calculate a corrected matrix; and the calculated matrix is stored in storage means.

Paragraph 0100:

The correction process for matching white point is described. Where the tristimulus values in the sRGB color space are (Xs, Ys, Zs) and the tristimulus values of the corresponding color giving the same perception in the wRGB color space are (Xw, Yw, Zw), according to Vonkries rule the following relationship is true. Vonkries rule is a color conversion method that considers that when the illuminant light source (white point) differs, the human eye has the function of maintaining a fixed color perception for colors of different illumination (chromatic adaptation), and is a law that holds that where stimuli in the three types of cells in the [spindles] cones of the human eye are L, M, N, the stimulus amount sensitivity is inversely proportional to the illuminant light source.

$$\begin{pmatrix} Xw \\ Yw \\ Zw \end{pmatrix} = (Mb^{-1}) \begin{pmatrix} Lww/Lws & 0 & 0 \\ 0 & Mww/Mws & 0 \\ 0 & 0 & Nww/Mws \end{pmatrix} (Mb) \begin{pmatrix} Xs \\ Ys \\ Zs \end{pmatrix}$$

Paragraph 0101:

Conversion from tristimulus values XYZ to cone level stimulus amounts L, M, N uses the following conversion matrix Mb, proposed by [Bladford] Bradford.

$$Mb = \begin{pmatrix} 0.8951 & 0.2664 & -0.1614 \\ -0.7502 & 1.7135 & 0.0367 \\ 0.0389 & -0.0685 & 1.0296 \end{pmatrix}$$

Paragraph 0105:

In the second embodiment, the output color value side white point converted from the RGB color space to the XYZ color space is corrected to match the white point of the [enter six] input side white point converted from the RGB color space to the XYZ color space, but correction may be performed during conversion of color value color space from the RGB color space to the XYZ color space. That is, the coefficients of matrix M or matrix N may be corrected to match the white point of the input color value side in the XYZ color space to the white point of the output color value side in the XYZ color space, or to match the white point of the output color value side in the XYZ color space to the white point of the input color value side in the XYZ color space. This is because in either case, there is no change in the ability to match the white points of the two color spaces in the XYZ color space.